Method and communication system for automatically
discovering the common Multimedia Service Capability

FIELD OF INVENTION

The present invention relates a method, a system, a server and a computer program
product for automatically discovering the common Multimedia Service Capability.

BACKGROUND OF THE INVENTION

Multimedia services are foreseen to bring new revenues to the cellular operators
running either or both 3G WCDMA and 2.5 G GSM networks. Since plain circuit
voice will be an important source of revenue still for many years, the market is
developing services 'beyond' voice. These are multimedia applications that for
example includes a normal voice call but add another media in parallel to that
speech call, so that the two mobile users can both talk and visually share another
media at the same time. This shared media may be a still image, a 1-way live video,
text or game. This type of shared services we herein call Shared Multimedia (SMM)
services.

Shared multimedia services requires that a user terminal, e.g. a mobile phone, is
capable of running both a standard circuit switched voice call and a packet
switched IP session at the same time, besides hosting the client that makes up the
application logic.

A highly wanted feature by operators is that mobile users can e.g. visually see from
their phone display, which- if any, Shared Multimedia services that are applicable
within the ongoing voice call. If the remote user and the calling user both have the
capability to use one or several shared multimedia services, one or several icons
could be enlightened in the display of both user's mobile phones. This type of
capability check we herein call the shared multimedia capability discovery process.

However, the de-facto capability discovery solution discussed currently in
standardisation, is oriented around letting the mobile phone initiate a packet
switched based mobile capability check towards the remote mobile phone, just after
the voice call has been established. This means that a capability discovery check

will take place over the radio interface for all mobile-mobile calls, irrespective of whether or not the remote user has the SMM capability.

The problem lies with finding a mobile capability discovery method that is optimised from a radio resources perspective. Hence, the capability discovery process and results should only be passed over the radio interface when absolutely necessary and unavoidable. Thus, the capability discovery mechanism shall not be invoked in mobile-to-non-mobile voice calls and it shall not be invoked for not SMM-capable mobile phones or for users who are not allowed to use the service even though their mobile phones has the capability technically.

Terminal oriented solution uses packet switched IP session to send a capability query message from the initiating terminal to the other terminal. The packet switched IP session uses radio resources. This means that a query has to be initiated in the beginning of every phone call if one of the two terminals supports SMM. The probability that both terminals will support SMM will however be very low for many years. Therefore, a lot of radio traffic over the capacity limited radio interface will be generated unnecessarily.

Thus, one object of the present invention is to provide a method and a system for Multimedia Capability discovery that avoids unnecessary use of the radio interface and resource.

Yet another object is to provide a solution to the problem to discover if a called User terminal is supporting Shared Multimedia service if the service is based on other technologies than IP multimedia subsystem (3GPP IMS), for example MMS technology.

SUMMARY

The above-mentioned objects are achieved by a method, a system, a server and a computer program product set forth in the characterizing part of the independent claims.

This solution avoid unnecessary use of the radio interface and is based on a network storage, which is accessible without registration to find out about the

calling as well as the called user's multimedia capabilities during a voice call. If there is a positive capability discovery result out of this for both users, the system will send a message to each of the two user terminals that they should notify the users e.g. by displaying an icon above a soft button. It can be that the terminal

5   displays a shared multimedia-Image icon, if this was the only commonly supported capability of both users, up to a whole range of more or less complicated SMM services. According to the invented method there will be no need for establishing a packet switched session, which use a lot of radio interface signalling, until the Multimedia Service capability (MMCap) of both subscribers and their user terminals

10 are investigated and responded to both user terminals and their users.

In more detail, the invention comprises following steps and means for supporting and performing the steps of:

15   - notifying a network storage (TCdb), wherein user terminal Multimedia
                  capability is stored, by sending a capability request concerning the
                  user terminals of the calling party and called party, when a trigger
                  indication has been generated by the circuit switched network;

              - analyzing the response comprising the requested Multimedia Service

20   Capabilities;

              - responding to said user terminals information regarding matching
                  Multimedia Capabilities, if at least one matching service is found.

      The packet switched session is not established until said steps are
      performed.

25

Preferred embodiments are set forth in the depending claims.

One advantage is that the present invention offers Multimedia Capability discovery that avoids unnecessary use of the radio interface and resource.

30

Further one advantage with the present invention is that the end-user gets clear information whether or not a shared multimedia application can be utilized in a mobile-to-mobile voice call or not.

• Yet-another advantage is that the invention provide a technique for requesting another User terminal if it is supporting Share Multimedia service based on MMS technology.

5   BRIEF DESCRIPTION OF THE DRAWINGS
The invention will in the following be described in more detailed with reference to enclosed drawings, wherein:

Figure 1 is a schematic block diagram illustrating the system in which the
10   method for Multimedia Capability Discovery according to the
                 present invention is used.
Figure 2 is block diagram schematically illustrating a preferred
                 embodiment of the especially interesting parts in figure 1 during
                 the interval from the trigger generation to the analysis of the
15   TCdb response of the process for discovering the Multimedia
                 capability.
Figure 3 a block diagram schematically illustrating a preferred
                 embodiment of the especially interesting parts in figure 1 for
                 sending of the matching multimedia response to the two user
20   terminals.
Figure 4 is a block scheme illustrating very schematically a terminal or
                 mobile phone.
Figure 5 is a flow chart illustrating a preferred embodiment of the invented
                 method.
25   **Figure 6** is block diagram schematically illustrating another embodiment
                 of the system in figure 2.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS
Figure 1 is a schematic block diagram illustrating an embodiment of the system 10
30   in which the method for Multimedia Capability Discovery according to the present
invention is used. Subsystems of the system 10 will be discussed in more detail in
connection to the following figures 2 and 3.

As stated above, SMM (Shared multimedia) services requires that a user terminal
35   12, 13, e.g. mobile phone, is capable of running both a standard circuit switched
voice call (via interfaces and connections 11) and a packet switched IP session (over

the connections 15) at the same time, besides hosting the client that makes up the application logic for the SMM service. A circuit switched network 14 for mobile radio telecommunication based on any standard supporting Shared Multimedia services, e.g. 3G WCDMA and 2.5 G GSM, includes at least one Shared Multimedia

5   Application server 16.

Two users will not be able to use the SMM service, if not both the user terminals 12, 13 support the SMM service. A SMM session therefore starts with an investigation of the calling party's and the called party's SMM capability. According

10   to an preferred embodiment of this invention, the system 10 is provided with a network storage 18 comprising a Terminal Capability database TCdb. It is not important where the TCdb 18 is located, it can for example be located in either the Circuit switched network CS or the Packet Switched network PS. Said database TCdb 18 may be provided by one or several mobile radio communication operators

15   or other operators providing communication services to subscribers. The network storage 18 may be any storage medium being readable, writable, operated and handled by a server or other computer device. The database TCdb stores information regarding which Multimedia services that are available for a user or subscriber and the subscriber's user terminal 12, 13. The information in the TCdb

20   18 may be inserted and updated in different ways. Information about a user terminal 12, 13 capability may be inserted by the network operator. Alternatively, the information, i.e. IMEI (International Mobile station Equipment Identity) can be extracted from PDP context activation procedure to a packet switched network 20 and be used for deducing user terminal capability. Another alternative is to use the

25   UAProf (User Agent Profile) information from a packet switched session, at some point in time, to update the TCdb.

The Terminal database TCdb is provided with means for handling, sorting, reading and updating said database information. According to the present invention, TCdb

30   is provided with means for receiving Capability queries, means for reading the stored database information by using subscriber IDs e.g. the E.164 numbers, and means for sending a Capability result for each E.164 number back to the questioning entity, e.g. an application server. The TCdb comprises a computer or processing means (not shown), e.g. a CPU (Central Processing Unit), micro-

35   processor, PC (Personal Computer) etc, and connected data storage memories for storing data and software program code to be executed by said computer or data

processing device. The means for receiving Capability queries, means for reading the stored database information by using the E.164 numbers, and means for sending a Capability result for each E.164 number back to the questioning entity, said means is preferably implemented as software program code to be executed by

5   said computer or data processing device.

Different automatic methods for finding said database may be used, e.g. GUP which is a 3GPP (3rd Generation Partnership Project) technique and architecture. The most efficient method to use depends on where the database is situated and in which

10   kind of network the database is provided and is free to choose for designers of network and system. Instead of one network storage, the system may comprise many sub-storages, i.e. Sub-TCdbs.

An Application server for handling Shared Multimedia service SMM-AS 16 is run on

15   a computer or processing means (not shown), e.g. a CPU (Central Processing Unit), micro-processor, PC (Personal Computer) etc, and connected data storage memories for storing data and software program code to be executed by said computer or processing means. The application server SMM-AS 16 comprises means for searching and finding a Terminal Multimedia Capability Database TCdb and send a

20   Multimedia Capability query to said TCdb. The SMM-AS 16 further comprises means for notifying the network storage 18 (TCdb) by sending a capability request, i.e. said Multimedia Capability query, concerning the calling party and called party. The SMM-AS 16 also comprises means for analysing the received response comprising the requested Multimedia Service Capability. Furthermore, the SMM-AS

25   16 is provided with means for responding to said user terminals information regarding matching Multimedia Capability. The information may be sent by transmitting a WAP (Wireless Application Protocol) Push, or an SMS (Short message Service), or a message using any kind of radio bearer, to each user terminal 12,13. All above listed means residing in the SMM-AS 16 are possible to

30   implement as program software code executable in said computer or processing means.

In the following described embodiments, Intelligent Network IN technology is used for realizing some of the functions in the invented method and system. IN

35   technology is not the only possible technology when implementing the invention and should therefore not be regarded as a limitation.

For initiating an automatic SMM-AS request for common Multimedia Capability of two user terminals 12,13 to the TCdb, a special trigger has to be generated by the circuit switched network CS, i.e. the mobile radio telecommunication, when a

5   trigger event occurs in the network 10. Preferable events may be that a voice call is set-up between a calling party A and a called party B, or a voice-call answer notification is received from the called party B. This is a standard function in radio telecommunication and different triggers are possible to generate for different special purposes in and by a SSP (Service Switching Point) node (22 in figure 2) or

10 in a node combining MSC/SSP (Mobile Switching service Centre/Service Switching Point) functions. The MSC/SSP 22 is provided with means for receiving IN-Category, means for registering voice call set-ups and means for sending an IN-Trigger, i.e. request trigger, that can contain information, e.g. E 164 numbers for the calling and called subscriber A,B, about the voice call set-up, or , alternatively,

15 for sending information about the answer of the called subscriber to the home SCP node 26 of the calling party.

The following mentioned SMM services, the IN services and the WAP Push services are provided to the user terminals 12,13 by the network operator.

20

A preferred embodiment of the especially interesting parts of the system in figure 1 is schematically illustrated in a block diagram in figure 2. Said parts are interacting for discovering the Multimedia capability during the interval from the trigger generation to the analysis of the TCdb response. The illustrated part of the system

25 10 comprises a node MSC/SSP 22 (but MSC and SSP may be separated in one node each) belonging to a domain of the Mobile radio telecommunication network 14 that is visited by the calling party A. When the user makes IMSI Attach in the MSC 22 Service Area for the first time, the originating IN-category is sent to the visited MSC/SSP 22 where the user currently is roaming, either within the home

30 network or in a foreign operator's network. The SSP sends the IN-trigger over an interface 24 to a home SCP node 26 , i.e. Service Control Point node, belonging to the Intelligent Network IN of an home domain of the calling party A. This interface 24 between the MSC/SSP 22 and the home SCP 26 can be any of the standardized IN protocol, such as CAP (CAMEL Application Part) or CS-1. The E.164 numbers of

35 both the calling user terminal A and the called/connected user terminal B are

included. The receiving home SCP 26 will forward the trigger and subscriber identifiers to the SMM-AS 16, which is integrated with the node 26.

There is no need for the SMM-AS 16 to be located in the SCP node. If the SMM-AS is not located in said node, a function in the receiving home SCP 26 generates a message e.g. an Originated-Call notification or an Answer-notification message to the SMM Application Server 16. The E.164 numbers of both the calling user terminal A and the called/connected user terminal B are included in the notification message.

Optionally, when the SMM-AS 16 is alerted or has received the SCP notification, the SMM-AS can be programmed to confirm back to the SCP 26 that it has successfully been received. The originating SCP 26 can then respond back to the serving MSC/SSP 22, which continues the call set up.

The SMM-AS 16 interprets the IN-Trigger (or notification message) and generates a request for the Multimedia capability MMCap of the calling part A and the called part B. The Application server is able to address and send the request to the generic database server TCdb and receive a response from said database. Hence, SMM-AS 16 is provided with means for finding correct Terminal Capability database (TCdb), addressing and transmitting a Capability query to the TCdb. The TCdb 18 is programmed to perform ordinary database steps like:
- Receiving the Capability queries;
- Reading the stored database information corresponding to each of said E.164 numbers and create a Capability result for each of said numbers;
- Sending the Capability results to the questioning SMM-AS node.

The SMM-AS 16 analyzes the Capability results and to try to match the different capabilities, MMCap12 and MMCap13, and prepares a matching multimedia response to be sent to the calling 12 and called user terminal 13, respectively. Therefore, the SMM-AS 16 node is provided with means for analyzing by comparing the pair of Capability results for at least one matching capability. Especially interesting parts of the system 10 in figure 1 during for sending of the matching multimedia response to the two user terminals 12,13 is schematically illustrated in a block diagram in figure 3.

According to figure 3, the SMM-AS 16 also functions as a WAP Push Initiator, here defined as means for performing the step of responding to said user terminals information regarding matching Multimedia Capability MMCap. The information is sent via an Push Access Protocol to a WAP Push Proxy Gateway 28 that is

5   forwarded to a Short Message Service Centre, SMSC, 30 transmitting a WAP_Push message to both user terminal 12,13. The step of responding information to the user terminals12,13 is preferably performed simultaneously by sending a message to each of the user terminals 12,13 using protocols, services interfaces, and software entities that provide means to push data to user agents in WAP clients in

10   the user terminals 12,13. The WAP Push is not transferred via the packet switched network. WAP Push Architecture is earlier known from e.g. the document "WAP Push Architectural Overview", version 03-Jul-2001, WAP-250-PushArchOverview-20010703-a, available on http://www.wapforum.org/.

15   The information of said WAP_Push is interpreted by a User Agent stored in each of said user terminals 12,13. A User Agent is a software application, that is stored in a user terminal and provides the user with a special kind of service. The User Agent can for example enlighten the Icon on the terminal display after having received said WAP Push message.

20

Figure 4 is a block scheme illustrating very schematically a User terminal 60, here illustrated as and denoted a terminal or a mobile phone. This terminal 60 comprises a housing 62 within which a radio unit for signalling, and transmitting and receiving voice calls and data information over the air interface to a mobile

25   radio telecommunication network. The radio unit 64 is connected to and controlled by a control unit 66, which is a computer or processing means (not shown), e.g. a CPU (Central Processing Unit), micro-processor, PC (Personal Computer) etc. As stated above, shared multimedia services requires that a mobile phone is capable of running both a standard circuit switched voice call and a packet switched session

30   at the same time, besides hosting the client that makes up the application logic. Therefore, a memory storage means 68 is connected to the control unit 66 for storing data and software code to software program for controlling the control unit and the terminal. The illustrated memory storage means 68 represents many different kinds of storages like ROM, RAM, EPROM, etc, usually used in terminals

35   on the market. In said memory storage means 68 is loaded and stored User Agents for different services like WAP Push messages, MMS, Multimedia Capability, SIP

messages, etc. User agents software programs that is automatically alerted when the control unit identifies a corresponding incoming service. The terminal 60 is also provided with a Man-Machine-Interface, MMI, a display 70 connected to and controlled by the control unit for showing different information. The display 70 may

5   be able to show soft button that when touch can activate a software application stored in said memory storage means 68. The different unit of the terminal 60 is powered by at least one battery (not shown).

A preferred embodiment of the invented method for automatically discovering the

10   common Multimedia Service Capability of at least two subscribers will in the following be described with reference to figure 5, which is a flow chart illustrating a preferred embodiment of the invented method.

Some standard initial procedures, step 100, has to take place to achieve the

15   conditions and requirements for the method to work properly. The operator has to set in the HLR (Home Location Register) an originating IN category on the users that are subscribing to any SMM service, e.g. SMM-Image. At power on, the user makes an IMSI Attach (International Mobile Subscriber Identity Attach which is a standard step described in the Standard specifications for GSM etc) in the visited MSC

20   Service area for the first time. The HLR sends the originating IN-Category to the visited MSC/SSP where the user is roaming (either within the home network or in a foreign operator's network) currently. The database TCdb, storing information regarding which Multimedia services that are available for a user or subscriber and the subscriber's user terminal 12, 13, has to be updated. The information in the

25   TCdb 18 may be inserted and updated in different ways. Information about a user terminal 12, 13 capability may be inserted by the network operator. Alternatively, the information, i.e. IMEI (International Mobile station Equipment Identity) can be extracted from PDP context activation procedure to a packet switched network 20 and be used for deducing user terminal capability. Another alternative is to use the

30   UAProf (User Agent Profile) information from a packet switched session, at some point in time, to update the TCdb.

When a voice call is initiated over a circuit switched network (14) by a terminal 12 to another terminal 13, following steps will be performed for automatically

35   discovering the common Multimedia Service Capability of two user terminals (12,13). The method comprises the of:

    - notifying a network storage (TCdb), wherein user terminal Multimedia capability is stored, by sending a capability request concerning the user terminals (12,13) of the calling party and called party, when a trigger indication has been generated by the circuit switched network (Step 102);

    - analyzing the response comprising the requested Multimedia Service Capabilities (step 104);

    - responding to said user terminals (12,13) information regarding matching Multimedia Capabilities, if at least one matching service is found (step 106);

    - alerting the user of the possibility to start a Multimedia service session if at least one matching SMM service is found (step 108).

Naturally, the different elements of the system have to perform different standard steps and functions for handling the instructions and information signalled in the system discussed in figures 1, 2 and 3. The characteristic steps have to interact with the standard steps and functions of the system, which steps will be discussed and described in the following.

The method starts when a subscriber makes a voice call set-up procedure:

- Setting-up a voice call;

- Analyzing IN-category for the caller's home (IN-)SCP address in the visited MSC/SSP node. Said steps are regarded as well-known standard steps in a circuit switched network. As an alternative, the step of setting-up a voice call can be replaced by receiving a voice call answer (indicating that the called party has answered).

The next step performed in the system is the generation and sending of indication information, e.g. IN-Trigger, :

- Generating and sending an indication information from the visited MSC/SSP 22 node to the caller's SCP node 26 (home IN-SCP 26);

- Receiving indication information in the caller's SCP node 26, the indication information comprises the called and the calling parts E.164 numbers;

- Generating and passing the indication information to the SMM-AS 16.

Thus, when the receiving SCP node 26 of the caller gets the indication information, either as an IN-trigger or by use of Parlay technology (see www.parlay.org), generated by the MSC/SSP 22, the SCP 26 generates and passes the indication information to the SMM-AS 16. The E.164 numbers of both the calling and the

5   called/connected user are sentto the SMM-AS 16, which will generate capability queries regarding the called and the calling parts E.164 numbers.

Optionally, as stated previously in this description, the SMM-AS 16 can confirm back to the SCP 26 that it has successfully received trigger indication to generate

10   capability queries regarding the called and the calling parts E.164 numbers. The originating SCP 26 can then respond back to the serving MSC/SSP 22, which continues the call set up.

The next step performed by the SMM-AS 16 is the step of sending a capability

15   request concerning the user terminal 12 of the calling part A and user terminal 13 of the called part B to the network storage TCdb 18. SMM-AS16 can proceed by issuing either a general capability query, or a specific Shared Multimedia capability query, towards the Terminal Capability database 18 of each A- and B-subscriber (terminals 12, 13). It is understood that the SMM-AS comprises means for obtaining

20   the address to the Terminal Capacity database TCdb.

The steps performed by the TCdb 18 are ordinary database steps:
- Receiving the Capability queries;
- Reading the stored database information corresponding to said E.164 numbers

25   and create a Capability result for each of said numbers;
- Sending the Capability results to the questioning SMM-AS node.

After the reception of the Capability results, SMM-AS 16 perform the step of analyzing the response comprising the requested Multimedia Service Capability:

30   - Analyzing by comparison of the pair of SMM Capability results for at least one matching SMM capability service (step 104).

When the analyze is ready, the SMM-AS 16 performs the step of responding to said user terminals 12,13 information regarding matching Multimedia Capability

35   (MMCAP), if at least one matching service is found (step 106);

- If no common capability for the two compared capability results is found, no capability response is sent;
- If at least one common Multimedia Capability is identified, send a Capability response comprising said capability or capabilities as a WAP Push message to said
5   user terminals 12,13.

In the user terminals 12, 13, following steps will be performed:
- Receiving the WAP push message and load it to the correct User Agent in the user terminals;
10   - Alerting the user of the possibility to start a Multimedia service session (step 108), e.g. enlightening at least one Multimedia Icon on a display device of each of said user terminals, if the information regarding the matching services is received.

It will only be possible for the User Agent in the user terminals to conduct the
15   following registration steps and the enlightening of the SMM Icon, if the capability response, e.g. as a WAP Push message, is receieved:
         1. Enlighten the SMM icon or corresponding SMM indicator.
         2. PDP (Packet Data Protocol) Context Activation.
         3. Start SIP registration.
20   - In case of a MMS based Shared Multimedia, this step   will not be automatically activated.

The great yield in radio resources in comparison to the procedure wherein said registrations always will be performed by default when each user makes an
25   ordinary voice call set-up is the fact that the registration steps – PDP Context Activation and SIP registration – will not be initiated until it is investigated and determined that the two user terminal can use the same, i.e. matching, Shared Multimedia services. Hence, there is no need to initiate a packet switched session and to send the capability request through the packet switched network.
30
When the user sees the SMM-image icon or equivalent, the user may press for example a soft button underneath an SMM-icon, to send an image e.g. in JPEG format, towards the remote user of the ongoing voice call.

35   Figure 6 is a block diagram illustrating further one embodiment of the part of the present invented system that is discussed in connection to and illustrated in figure

2. The system in figure 6 comprises an additional database in the network storage
18. Said database is a bearer database Bdb, which is continuously updated with
technical network information. The database Bdb contains at least bearer
information for different networks. According to this embodiment, the capability
5   request concerning the user terminals sent by the SMM-AS 16 to the network
storage 18 will also include a request for bearer information regarding the networks
in which the user terminals 12, 13 are roaming. The capability results for the
terminals comprise radio bearer information concerning the networks in which the
user terminals 12, 13 are roaming. When the SMM-AS 16 is analyzing the response
10   comprising the requested Multimedia Service capabilities (step 104), the analysis
will also include a check if the terminals 12, 13 are roaming in networks having the
kind of radio bearer supporting simultaneous connection to packet switched and
circuit switched networks. Although both terminals have matching multimedia
capability, one of the terminals, or both, may be roaming in a network that is not
15   provided with the special kind of radio bearer needed for that kind of service. In
those cases, the SMM-AS 16 will not respond to said user terminals (12,13).
However, if terminals 12,13 have matching multimedia capability, and both
terminals are roaming in a network that is provided with the bearer needed for said
kind of service, then the SMM-AS 16 will respond to both user terminals (12,13)
20   that they have matching multimedia capability.

In figure 6, both databases TCdb and Bdb are stored in the same network storage
18. However, said databases TCdb and Bdb may be stored in separate storages. The
SMM-AS will then split the capability request into two requests and send one
25   request to the address of TCdb and the other to the address of the Bdb.

Although IN-technology has been used in the embodiments above, other
technologies may be used instead, for example Parlay technology (see
www.parlay.org).
30

For alerting the user of the terminal, means for generating a characteristic sound,
or vibrations, etc, may be used instead of an icon.

In the described embodiment above, the E.164 number have been used as an
35   subscriber identity, but other subscriber or terminal related information, such as
IMEI, IMSI, may be used as well as identity for a subscriber.

The invention also relates to a server provided in a node of the claimed system. The server comprises means for notifying the network storage (18) by sending a capability request concerning the user terminals of the calling party and the called party, when a trigger indication has been generated by the circuit switched network, means for analyzing the response comprising the requested Multimedia Service Capability and means for responding to said user terminals information regarding matching Multimedia Capability, if at least one matching service is found. implemented by means of a computer program comprising the software code means for performing the steps of the method. The claimed server comprises different means for performing different functions. Said functions is possible to implement as computer executable software being adapted to run at a computer or other processing means.

The method may be implemented by means of a computer program comprising the software code means for performing the steps of the method. A computer program product comprising said computer executable software stored on a computer readable/usable medium, the software being adapted to run at a computer or other processing means. When said computer executable software is loaded and read by said computer or other processing means, said computer or other processing means is able to perform the steps of the method according to any of claims 1-8.

In the description, different kind of Computer or processing means are listed, e.g. CPU (Central Processing Unit), micro-processor, PC (Personal Computer), server unit, etc. Said list is not exhaustive and should therefore not be regarded as a limitation for the scope of the protection.

The present invention is not limited to the above-described preferred embodiments. Various alternatives, modifications and equivalents may be used. Therefore, the above embodiments should not be taken as limiting the scope of the invention, which is defined by the appending claims.